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March 16, 1995

Mr. William F. Caton
Secretary
Federal Communications Commission
1919 M Street, N.W. - Room 222
Washington, D.C. 20554

RECEIVED**MAR 16 1995****FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF SECRETARY**

RE: Ex Parte Material
CC Docket No. 94-1

DOCKET FILE COPY ORIGINAL

Dear Mr. Caton:

Attached is an analysis in which USTA quantifies the errors contained in AT&T's productivity calculations. (USTA previously identified AT&T's errors in a February 9, 1995 Ex Parte.)

The original and a copy of this ex parte notice are being filed in the Office of the Secretary. Please include it in the public record of this proceeding.

Sincerely,

A handwritten signature in cursive script that reads "Mary McDermott".

Mary McDermott
Vice President -
Legal & Regulatory Affairs

cc: Kathleen Wallman
Richard Metzger
Michael Katz
David Nall
Mark Uretsky
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Correcting AT&T's Mistakes

Summary

In the Price Cap Performance Review, AT&T has asked that the new price cap plan be made much more onerous for the local exchange carriers (LECs).¹ AT&T has urged that the Commission base the productivity offset on what it calls a "realized X factor." AT&T claims that the "realized X factor" is the value of the productivity offset that, if established back in 1991, would have yielded an average rate of return of 11.25% per year for the LEC industry.

The principle underlying AT&T's approach is rate-of-return regulation. In essence, AT&T attempts to construct an equation that solves backwards from accounting results to determine what productivity offset would have reset earnings to the authorized return for rate-of-return companies. This method of setting an offset, of course, recaptures all the benefits of the plan and therefore destroys the incentives the Commission intended.

This *ex parte* filing demonstrates that AT&T's calculation of its "realized X factor" contains outright errors. By this, we do not mean questionable assumptions, but rather outright mistakes. As shown below, if these mistakes are corrected, the "realized X factor" is at least 1.3% per year lower than that calculated by AT&T.

The implied productivity offset calculations presented by AT&T are substantially mistaken because AT&T: utilized wrong rates of return, including estimates of 1994 LEC earnings that are too high; omitted entire LECs from its original analysis; disregarded or incorrectly applied the Commission's price cap rules regarding the timing of price cap adjustments; and inflated LEC earnings by revenues never earned.

Description of Mistakes

USTA previously presented evidence that AT&T's implied LEC productivity calculations are both conceptually incorrect and contain computational mistakes. USTA presented descriptions of these mistakes in Reply Comments² and in a written *ex parte*

¹ See, e.g., Federal Communications Commission, *In the Matter of Price Cap Performance Review for Local Exchange Carriers*, CC Docket No. 94-1, Comments of AT&T, May 9, 1994.

² USTA Reply Comments, CC Docket No. 94-1, filed June 29, 1994, pp. 49-51, 59-61 and Attachment 4, pp. 32-36.

filed February 9, 1995 in this docket (Attachment 4).³

Below, USTA describes specific mistakes in AT&T's "realized X factor" calculations. AT&T utilized wrong rates of return for the LECs, importantly including estimates of 1994 LEC earnings that are too high. AT&T omitted entire LECs from its original analysis. AT&T disregarded or incorrectly applied the Commission's price cap rules regarding the timing of the "GNP-PI less productivity offset" price cap index adjustments. AT&T inflated LEC earnings by revenues never earned by making the false assumption that all price cap LECs priced to their caps.

1. Wrong Rates of Return

AT&T asserted that the rate of return of the seven Regional Bell Operating Companies (RBOCs), excluding Nevada Bell, was 12.89% for the 1991-1993 period. AT&T asserts that this calculation is based on ARMIS data.

AT&T's calculation is simply incorrect. The correct number, based on ARMIS data, is 12.62%, a difference of 27 basis points.⁴ This AT&T mistake overstates the "realized X factor" by 0.6. The Commission can review the filed ARMIS data itself and verify that AT&T has misrepresented the rate of return of the LECs in 1991-93.

AT&T's estimates of 1994 LEC earnings are also overstated. USTA has filed updated estimates of LEC earnings for 1994 that demonstrate that the calculations prepared by AT&T are mistaken. On February 9, 1995 USTA filed updated LEC earnings data (including estimates for 1994) in response to a request from the Common Carrier Bureau.⁵ The data filed by USTA indicates that 1994 earnings for the price cap LECs was 13.6%, while AT&T utilized an unspecified estimate of 14+%.

2. Unjustified Omission of LECs

AT&T's original calculations did not include any price cap LECs other than seven

³ AT&T filed a written *ex parte* on March 10, 1995 (letter from Bruce K. Cox, AT&T, to William F. Canton, Acting Secretary, FCC) that contains further errors. USTA addresses those errors herein.

⁴ When AT&T made its original filing and when it filed *ex partes* on this subject, 1994 results were not available. Now, preliminary rate of return data for 1994 are available and have been incorporated into the results presented here.

⁵ Additional 1994 information for one LEC study area under price cap regulation was provided in a USTA *ex parte* letter filed on March 14, 1995 (from Mary McDermott, USTA to William F. Canton, Secretary, FCC). This filing updated the industry estimated 1994 rate of return from 13.33% to 13.64%. The 13.64% estimate has been used in the analysis here.

RBOCs. AT&T explained this omission, stating that inclusion of additional LECs would be "too laborious," because data were not available for all LECs in computer-readable format. AT&T's explanation for this omission lacked credibility.⁶ In a subsequent *ex parte*, AT&T did include these companies.

Including all the price cap LECs lowers average LEC earnings. The 1991-93 average rate of return of all price cap LECs is 12.40% per year. The effect of this AT&T mistake is an overstatement in earnings is an additional 22 basis points per year. This mistake overstated the implied productivity offset by 0.5.

3. Disregarding Commission Rules Regarding PCI Adjustments

AT&T disregarded or incorrectly applied the Commissions rules regarding the timing and magnitude of price cap index adjustments. As described by USTA on February 9, 1995, AT&T mistakenly applied the "GNP-PI less productivity" formulas to two separate half-year periods (one at the beginning and one at the end of its calculations). Because of the specific historical values of GNP-PI and because Commission rules require price cap indexes to adjust fully at each annual filing, use of each of these "half-year" conventions introduces mistakes in AT&T's calculations.⁷

USTA demonstrated that because July 1 adjustment of price cap indexes is required by the Commission's rules, the actual LEC price cap indexes were not adjusted by (and should not be adjusted by) "GNP-PI less productivity offset" in the January 1991 to June 1991 time period. Importantly, it is a fact that GNP-PI growth adjustment for 1991 was 4.8%, an upward adjustment greater than the 3.3% productivity offset reduction to the PCIs. Thus, use of an inappropriate "GNP-PI minus productivity offset" calculation in the first six months of 1991 required AT&T to estimate a higher implied productivity offset to counteract the unwarranted use of half a year of GNP-PI during the first six months of 1991.⁸

⁶ These revised estimates, however, are still plagued by the other errors described herein.

⁷ AT&T's March 10 submission appears to acknowledge the errors in its "GNP-PI less productivity" calculations. AT&T states that its "use of half-year data for the July-December would produce no significant difference." In its *ex parte*, AT&T never claims that it was correct when it altered the existing Commission rules in this instance.

⁸ Because the AT&T method adjusts PCIs by a revenue ratio (i.e., the ratio of AT&T's estimate of LEC revenues at earnings of 11.25% to AT&T's estimate of potentially realized LEC revenues) any changes to estimated revenues directly effect the "realized X factor" computed by AT&T. Thus, AT&T's mistakes with revenues translate into mistakes in the productivity offset.

After USTA pointed out this mistake, AT&T tried to dismiss it by claiming that "had the GNP-PI and productivity offset for this period were (sic) set at zero, the calculated X factor developed by the direct model would have been even higher."⁹ AT&T omits the fact that the GNP-PI growth used in the 1991 Annual Access filing was 4.8%.¹⁰ Thus, when AT&T applies half of 4.8% (GNP-PI) minus 3.3% (productivity offset), during a period when actual LEC PCIs were flat, its model requires an even higher implied productivity offset, not a lower one as claimed by AT&T.

This mistake is not cancelled out or in any way ameliorated by AT&T's use of only half of the actual "GNP-PI less productivity offset" at the end of its calculation -- because of the specific history of GNP-PI. In the latter years, when GNP-PI growth was less than 3.3%, use of the "GNP-PI less productivity offset" adjustment in price cap indexes actually reduces PCIs. Commission rules require that when the PCIs adjust annually, the actual LEC PCIs adjust downward by the full amount of "GNP-PI less productivity offset" on July 1, rather than by half that amount, as wrongly calculated by AT&T. Incorrectly, AT&T credits the LECs' PCI levels with only half of the actual annual PCI change in the final period of AT&T's analysis. By artificially cutting the price cap adjustment in half for six months, this forces the implicit productivity offset computed by AT&T to cover twice the ground in six months than is actually required by Commission rules (and reflected in the actual PCIs). This mistake is equivalent to overstating LEC earnings in the last period of AT&T's analysis, thereby inflating the offset.

Thus, AT&T's calculations of its estimated productivity offset contain two different errors associated with improper use of "GNP-PI less productivity offset." Rather than cancelling out one another, these mistakes compound in their effect to inflate the AT&T productivity offset estimate. The AT&T implied productivity offset is overstated by at least 0.3 due to these mistakes.¹¹

4. Inflation of LEC Earnings by Revenues Never Earned

AT&T further mistakenly inflates actual LEC earnings by imputing revenues that were never earned. AT&T did so by increasing actual LEC revenues and earnings by the

⁹ AT&T March 10, 1995 *ex parte*, pp. 2-3.

¹⁰ The actual history of the GNP-PI adjustments from 1991 through 1994 necessary to verify these AT&T mistakes is contained in Attachment 2.

¹¹ A demonstration of these AT&T mistakes, quantified for the period 1991-1994, is contained here in Attachment 3. In addition, using only the 1991-1993 time period, as done in AT&T's original analysis, the offset is overstated by these AT&T mistakes by 0.5. This can be verified by replication Attachment 3 ending in December 1993 and applying mistaken half-year treatment to July through December of 1993.

amount that the LECs priced below their price cap indexes.¹² AT&T admits that its "direct model's test assumption is that pricing will be at the cap."¹³

This AT&T assumption is, of course, completely false. In response to competitive pressures, the interstate access services of the price cap LECs are priced approximately \$1.1B below caps.¹⁴ The use of overstated LEC earnings estimates biases upward the AT&T "realized X factor." This specific mistake, together with the other errors described in the USTA February 9, 1995 *ex parte* but not separately quantified above, overstated the AT&T implied productivity offset is overstated by 0.8 to 1.2. USTA necessarily states a range estimate due to the interactive nature of AT&T's errors and the lack of documentation, and precision, in AT&T's analysis.

¹² Contrary to mistaken approach suggested by AT&T in the review of the LEC plan, during the review of AT&T's price cap plan, AT&T did not recast its own revenues or earnings by the extent to which AT&T was priced below its price caps.

¹³ AT&T March 10, 1995 *ex parte*, p. 2.

¹⁴ Further, AT&T concedes that any of its "realized X factor" methods will similarly inflate actual LEC revenues. *Id.*, p. 2.

Conclusion

Even accepting AT&T's basic premise (which the Commission should not), the specific mistakes quantified herein (those quantified here total 1.3%) would reduce AT&T's implied productivity offset from 5.47% to 4.17%.¹⁵

AT&T "Realized X Offset"	5.97%
less AT&T "LEC Productivity Dividend"	<u>0.5%</u>
AT&T Productivity Offset	5.47%
less Mistakes Quantified Herein*	<u>1.3%</u>
Result (before correction for other errors)	4.17%

* The errors committed by AT&T are interactive in nature and therefore cannot be simply added together. USTA's calculation of this 1.3% figure is displayed in Attachment 1.

Despite the fact that the above-described serious errors can and must be corrected, nothing can correct the overriding fundamental flaw with AT&T's basic premise, which is that the Commission should totally recapture all of the efficiencies provided by price cap regulation. The Commission must not reclaim the very incentives that price cap was designed to create.

The Commission cannot not let the demonstrated mistakes in AT&T's analysis go uncorrected.

¹⁵ In the AT&T Price Cap Performance Review (CC Docket No. 92-134), AT&T argued strongly against any recapture of efficiencies as a result of the Commission's review of the plan. In this docket, AT&T again argues that all productivity gains should not be recaptured, but does so only slightly by reducing its estimated 5.97% "realized X factor" by 0.5% (a "LEC productivity dividend"), resulting in a 5.47% productivity offset.

Correction of Specific AT&T Mistakes

		<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	
Achieved Return		11.81%	12.34%	13.04%	13.64%	
Baseline Return		11.25%	11.25%	11.25%	11.25%	
Difference		0.56%	1.09%	1.79%	2.39%	
Accounting Return above Baseline:	199	0.56%	0.56%	0.56%	0.56%	
	1					
	199		0.53%	0.53%	0.53%	
	2					
	199			0.70%	0.70%	
	3					
	199				0.60%	
	4					
Incremental Return		0.56%	0.53%	0.70%	0.60%	0.598% Average Incremental Return

	<u>1994</u>	
1994 Rate Base (est.)	31,621	\$ million
Average Incremental Return	0.598%	
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Earnings Value	189	\$ million
Tax gross up	0.62	
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Revenue Value	305	\$ million
Total Price Cap Revenue (1994 estimate)	21,453	\$ million
Incremental Revenue	1.4%	\$305 / \$21,453
"Realized X Factor" Corrected for Certain AT&T Mistakes	4.7%	3.3% + 1.4%
Size of AT&T Mistakes	1.3%	5.97% - 4.7%

GNP-PI Changes

GNP-PI Adjustments in Actually Used in LEC Price Cap Annual Filings:

<u>Effective Date</u>	<u>GNP-PI Percent Change</u>
Jan. 1, 1991	None
July 1, 1991	4.8%
July 1, 1992	3.4%
July 1, 1993	3.0%
July 1, 1994	2.8%

Source: LEC Tariff Review Plan filings and compliance filings.

Replication of Specific AT&T Mistakes

Correct Application of the Commission's Rules Governing the Timing of PCI Adjustments:

	PCI for Jan thru June	GNP-PI	Prod Offset	GNP-PI minus X	PCI for Jul thru Dec
1991	100.0	4.8%	3.3%	1.5%	101.5
1992	101.5	3.4%	3.3%	0.1%	101.6
1993	101.6	3.0%	3.3%	-0.3%	101.3
1994	101.3	2.8%	3.3%	-0.5%	100.8

A. Implied Annual Revenue Growth Jan. '91- Dec. '94 0.3%

Mistaken Application of the Commission's Rules Governing the Timing of PCI Adjustments (used by AT&T):

	PCI for Jan thru June	GNP-PI	Prod Offset	GNP-PI minus X	PCI for Jul thru Dec
1991	100.0	AT&T mistakenly increased Jan. - June '91 by half of GNP-PI minus "X".			
1991*	100.8	4.8%	3.3%	1.5%	102.3
1992	102.3	3.4%	3.3%	0.1%	102.4
1993	102.4	3.0%	3.3%	-0.3%	102.1
1994	102.1	2.8%	3.3%	-0.5%	
1994*	AT&T mistakenly decreased July - Dec. by half of GNP-PI minus "X".				101.8

B. Implied Annual Revenue Growth Jan. '91- Dec. '94 0.6%

Mistake in AT&T Implied

Productivity Offset (B) - (A) :

0.3%

PCI calculations simplified here solely to illustrate AT&T mistakes.

* Starting and ending points incorrectly adjusted for
half-year effects, replicating AT&T's mistakes.



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February 9, 1995

Mr. William F. Caton
Acting Secretary
Federal Communications Commission
1919 M Street NW - Room 222
Washington, D.C. 20554

**RE: Ex Parte Filing
CC Docket No. 94-1**

Dear Mr. Caton:

Attached is a USTA paper prepared in response to the position on productivity contained in AT&T's January 31, 1995 ex parte in this docket.

An original and two copies of this ex parte notice and attachment are being filed in the Office of the Secretary on February 9, 1995. Please include this notice and attached material in the public record of these proceedings.

Respectfully submitted,

A handwritten signature in black ink, reading "Mary McDermott". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

Mary McDermott
Vice President, Legal & Regulatory Affairs

cc: Kathleen Wallman
Richard Metzger
Michael Katz
David Nall
Mark Uretsky
Anthony Bush
Alexander Belinfante

AT&T'S APPROACH TO PRODUCTIVITY IS INCORRECT

In 1989, the FCC accurately explained productivity as follows:

"Productivity advances in a firm or industry are manifested in increased output from the same amount of factors of production, or equivalently, the same amount of output from decreased levels of factor utilization. In either case, the dollar cost of a unit of output declines due to the diminished factor requirement per unit of output. Of course, if some or all factor prices are rising at the same time, those price rises will at least partially offset the reductions that would flow from improved productivity by itself. Nonetheless, the net price effect of productivity and any such factor price increases would continue to be less than the factor cost changes in isolation."¹

The FCC determined in the 1989 price cap order that the Christensen Total Factor Productivity Methodology was an appropriate way to measure productivity.² Indeed, it was this methodology that the Commission relied on in setting the productivity offset for AT&T. The Interstate Commerce Commission uses the Christensen methodology in its price cap plan for the railroad industry.

At the outset of this proceeding, USTA employed Christensen Associates to calculate the productivity offset for the price cap LECs using TFP. TFP is the ratio of total output to total input, where output includes all services provided by the LECs and total input includes the capital, labor, and materials used to provide those services. Christensen's methodology directly measures output and input. Therefore, it is a direct measure of TFP. Christensen's methodology is not dependent on arbitrary cost allocations, such as depreciation and separations. Nor is it subject to arbitrary productivity adjustments such as the 50/50 formula for common line. Christensen's methodology measures the actual experienced productivity, including all sources of scope and scale.

Even though AT&T has supported the Christensen methodology for

¹ Report and Order and Second Further Notice of Proposed Rulemaking, CC Docket No. 87-313, 4 FCC Rd 2873 at Para. 198 (1989).

² Id. at Para. 225 and n. 504 and see generally id. at Para. 198-239.

determining productivity in the past,³ AT&T has now changed its view. AT&T now claims that earnings are a better way of measuring productivity. It is evident AT&T's only reason for attempting to measure productivity using earnings is to produce a higher offset for the LECs. However, as USTA and others have demonstrated, earnings do not measure output and input.⁴ For that reason alone, AT&T's model is theoretically incorrect. Resetting the productivity offset to reduce LEC earnings to a specific level is rate-of-return regulation.⁵

The following are the major flaws in AT&T's position on productivity in this docket:

1. The AT&T model does not measure productivity. This model starts with interstate accounting results which are based on arbitrary accounting and cost allocation rules including separations and depreciation. AT&T's model does not correct for any of these adjustments. (For example, the Price Cap LECs' earnings from 1991 through 1993 could be restated from 12.39% to 11.50% if

³ AT&T employed Christensen Associates to perform a TFP study that AT&T filed in United States v. AT&T, Civ. Action No. 74-1698 (D.D.C. filed Nov. 20, 1974.) The purpose of that study was to determine the productivity of Bell System. AT&T advocated Christensen's methodology as the appropriate method for determining productivity.

⁴ See Ex Parte letter to Mr. William F. Caton from Jo Ann Goddan, Pacific Telesis, dated December 9, 1994; Ex Parte letter to Mr. William F. Caton from Maureen Keenan, Bell Atlantic Network Services, Inc., dated November 8, 1994; Ex Parte letter to Mr. William F. Caton from Maureen Keenan, Bell Atlantic Network Services, Inc. dated November 10, 1994; Ex Parte letter to Mr. William F. Caton from Maurice P. Talbot, Jr., BellSouth, dated December 8, 1994. USTA Reply Comments, June 29, 1994, Attachment 4, Economic Performance of the LEC Price Cap Plan: Reply Comments by National Economic Research Associates, Inc., pp 33-36.

⁵ FCC policy certainly favors price regulation over rate of return. See, e.g., Price Cap Performance Review for Local Exchange Carriers 9 FCC RD 1687, 1688 (1994) ("Moving from traditional rate of return regulation to price cap regulation was a significant improvement and response to these dramatic changes. ... In contrast to rate-of-return regulation, a regulatory system that caps prices creates profit incentives similar to those in fully competitive markets and generates positive motivations for reasonable rates, innovation, productivity growth, and accurate cost allocation, while reducing regulatory burdens.")

the most recent FCC recommended depreciation rates were used.⁶) This is just one of many examples of how earnings can be affected without any change in experienced productivity.

2. In its "study", AT&T arbitrarily inflated the price cap LECs' earnings. It did so by increasing earnings by the amount by which the LECs priced below their ceilings. AT&T assumes incorrectly that a company that prices below its PCI could increase its rates with no impact on demand. This assumption ignores the effect of price elasticity. If a company could increase rates without having any impact on demand, a company would be priced at its ceiling. However, due to competitive pressures, many LECs have priced below their cap. The AT&T method, if relied upon, would reduce any incentive for a price cap company to price below its cap.

3. In its formula, AT&T supposedly used half of the productivity and GNP-PI amounts for the time period from January through June of 1991. AT&T stated that these amounts were obtained from the LECs' annual Tariff Review Plans (TRPs). The TRPs for this time period did not include any amounts for GNP-PI or productivity. In fact, under the Commissions rules, the LEC price cap indices for the January through June of 1991 time frame were not to be adjusted for a productivity offset or the GNP-PI.⁷ Therefore, AT&T had no basis for making these adjustments but has overstated LEC productivity as a result.

4. AT&T made an error in its methodology related to the July through December of 1993 period. AT&T used actual 1993 price cap indices (PCIs) for the entire year and annual revenues but divided both the GNP-PI and productivity offset by two. The 1993 actual PCIs reflected the full annual amounts for productivity and GNP-PI. There is no reason for AT&T to divide the productivity or the GNP-PI by two. The result of the error is that AT&T overstates its productivity calculation.

5. AT&T further overstates LEC productivity results by assuming that the average rate of return for the three years equates to a single year productivity impact. In doing so, AT&T ignores the compounding effect of the productivity offset. A simple example will illustrate this problem. Assume that a company earned the following amounts in excess of 11.25%: year 1 equals \$2M, year 2 equals \$4M, and year 3 equals \$6M -- for a total of \$12M. Also assume that a productivity increase of 1 for the first year equals \$2M. According to AT&T's analysis, the productivity offset should be increased by 2 (\$12M divided by 3 (years) divided by \$2M). However, based on the price cap formula, an increase of 2 to the

⁶ See Ex Parte letter to Mr. William F. Caton from Mary McDermott (USTA) dated December 19, 1994 in CC Docket 94-1.

⁷ 47 CFR §61.48(e).

productivity offset would impact earnings by the following amounts: year 1 equals \$4M, year 2 equals \$8M and year 3 equals \$12M -- for a total \$24 Million. Thus, AT&T's methods overstates the effect on the productivity offset by a factor of two.

6. AT&T criticizes the Christensen study for not utilizing the "50/50" calculation for Carrier Common Line. However, because the Christensen study used Carrier Common Line minutes as a measure of output, use of the "50/50" formula would have resulted in a lower productivity offset for the LECs.

7. AT&T faults the Christensen study for not using FCC prescribed depreciation rates. Those depreciation rates do not measure the decline in the efficiency of assets. Economic depreciation rates are the appropriate measure to use in a TFP study and the Christensen study does so.

8. While attempting to verify the data underlying AT&T's analysis, USTA found that AT&T may have double counted the \$1 billion impact of exogenous cost reductions that have already been included in the LECs' price cap indices used by AT&T in its analysis.

9. AT&T claims that the Christensen TFP study should have measured only interstate access, rather than total company, productivity. This claim is mistaken. Total Factor Productivity is the ratio of total output to total input, where total output includes all services provided by the firm and total input includes all resources used. If the provision of interstate services and intrastate services were independent of each other, it would be possible to calculate a separate TFP for each. But interstate and intrastate services have common inputs. Therefore, it is not appropriate to calculate an interstate TFP. Any allocation of the common inputs would be arbitrary and different allocation schemes would produce different results.

10. AT&T claims, without corroborating data, that in the near future LEC input prices are likely to rise more slowly than input prices for the entire U.S. economy. On February 1, 1995, USTA submitted a paper by Christensen Associates that demonstrates that AT&T's position is incorrect. There is no conceptual or empirical basis for adding an input price differential to the productivity study. Christensen Associates and NERA have both proven that there is no difference in the input inflation experienced by the LECs as compared to the overall U.S. economy.⁸

⁸ See USTA Ex Parte, filed February 1, 1995: An Input Price Adjustment Would Be An Inappropriate Addition to the LEC Price Cap Formula by Dr. Lauritis R. Christensen; and, USTA Reply Comments filed June 26, 1994, Attachment 4, Economic Performance of the LEC Price Cap Plan, pp 23-31.

11. AT&T argues that moving average TFP understates the trend in productivity growth. The USTA proposed moving average Total Factor Productivity offset is, by its nature, unbiased since it smooths short term fluctuations in productivity that occur in individual years. The rolling average, by smoothing annual deviations, captures the real long term trend of the data. Further, 100% of LEC productivity gains will be automatically passed through to customers via the moving average.

* * * * *

AT&T's model has serious theoretical and mathematical flaws. USTA submits that even if these flaws could be corrected, the result would be an indirect productivity offset based on economic earnings. However, a direct measure for a productivity offset is preferred. USTA is the only party that has put on the record a direct productivity study that is based on sound economic theory. Therefore the Commission should use the results from the Christensen study in setting the productivity offset.